

# PATENT SPECIFICATION



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## PROVISIONAL SPECIFICATION.

### Improvements in Foot Arch Supports.

I, CHARLES HOULDSWORTH RAYNE, a British Subject, of "The Chantry", Ellerton Road, Wimbledon, S.W. 20, do hereby declare the nature of this invention to be as follows:—

The invention relates to foot arch supports comprising an inflatable pad which can be permanently secured to or inserted at any time in the shoe or boot.

In the known devices of this type, there is the drawback that while they give support to the metatarsal joint when such support is necessary, any free movement of the joint is prevented, which, consequently, becomes stiffened or atrophied.

For example, in walking, when the pressure is exerted on the heel, the support for this joint is useful, but when the pressure is exerted on the toes, it would be advantageous to permit the joint to have its normal flexibility.

For this purpose according to the invention, the foot arch support comprises an inflatable pad with two small chambers, one at the heel and the other at the metatarsal joint, connected by a closed channel of very small cross-section. The pad, which may be of rubber or other suitable flexible material, is filled with a fluid, for example air or oil.

When pressure is applied to the heel, the chamber at the heel is compressed and the fluid driven to the chamber at the front end which provides additional support to the joint. On the other hand, when the pressure is applied to the toes, the fluid is driven towards the chamber at the heel and the joint is capable of flexure.

Dated this 13th day of September, 1929.

ABEL & IMRAY,  
Agents for the Applicant.

## COMPLETE SPECIFICATION.

### Improvements in Foot Arch Supports.

I, CHARLES HOULDSWORTH RAYNE, a British Subject, of "The Chantry", Ellerton Road, Wimbledon, S.W. 20, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention relates to foot arch supports comprising a fluid-containing pad which can be permanently secured to or inserted at any time in the shoe or boot.

In the known devices of this type, there is the drawback that while they give support to the metatarsal joints when such support is necessary, any free movement of the joints is prevented, which, consequently become stiffened or atrophied.

For example, in walking, when the pressure is exerted on the heel, the support for this joint is useful, but when the pressure is exerted on the toes, it would be advantageous to permit the joint to have its normal flexibility.

For this purpose according to the

invention, the foot arch support comprises a pad with two small chambers, one at the heel and the other at the metatarsal joints, connected by a closed channel of very small cross-section. The pad, which may be of rubber or other suitable flexible material, is filled with a fluid, for example air or oil.

When pressure is applied to the heel, the chamber at the heel is compressed and the fluid driven to the chamber at the front end which provides additional support to the joint. On the other hand, when the pressure is applied to the toes, the fluid is driven towards the chamber at the heel and the joint is capable of flexure.

In the accompanying drawing, which represents an example of a pad according to the invention—

Fig. 1 is a plan of the pad and Fig. 2 is a vertical section of the pad inserted in the shoe or boot of the wearer.

The pad is formed of three layers *a*, *b*, *c* of rubber or other suitable flexible

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material, joined together, the middle layer  $b$  has two holes, a larger one  $b^1$  at the heel and a smaller one  $b^2$  at the metatarsal joints, the holes being connected by a narrow slot  $b^3$ . By this means, chambers  $d^1$ ,  $d^2$  connected by a channel  $d^3$  are formed between the upper layer  $a$  and the lower layer  $c$  and these chambers contain a fluid such as air or oil.

Pressure on the heel of the boot causes the fluid to flow towards the small chamber  $d^2$  and, conversely, pressure on the joint causes a flow in the reverse direction.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A foot arch support comprising a pad of rubber or other resilient material, secured to or inserted in a boot or shoe, the pad comprising two chambers containing a fluid, such as air or oil, one chamber being provided at the heel and the other at or adjacent to the metatarsal joints, the chambers being connected by a narrow closed channel.

2. A foot arch support, substantially as described with reference to the accompanying drawing.

Dated this 13th day of June, 1930.

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FIG. 1.

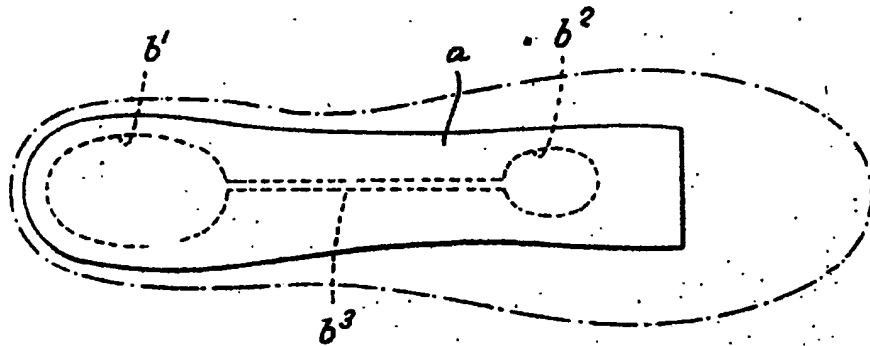
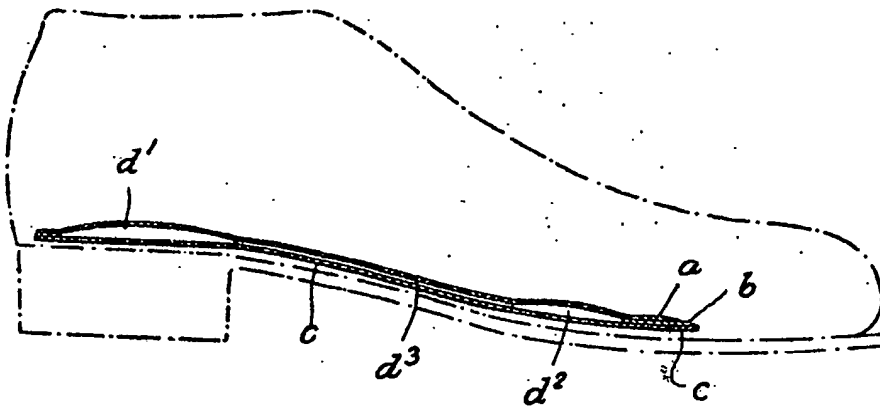


FIG. 2.



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